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Biofuels Market in Bulgaria

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Report Highlights:

The biofuels market in Bulgaria is just getting off the ground. Biodiesel and bioethanol are currently produced in small quantities although a number of facilities are being constructed. Local biofuel production should reach 350,000 MT in the next two years. The Government of Bulgaria is in the process of drafting the necessary EU-harmonized legislation with the goal of establishing a regulatory framework by end-2006. The biofuel industry, however, faces challenges related to Government concerns over reduced budget revenue, and a still-significant gray market in oil and distilled spirits.

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Summary

The biofuels industry in Bulgaria is an emerging sector. Biodiesel and bioethanol are currently produced only in small quantities in Bulgaria, although an increasing number of investors are constructing facilities for production of biofuels, mainly biodiesel. Constraints to production and trade include a lack of access to capital; lack of clear and regulated Government support; a limited local market; and lack of appropriate fixed investment to facilitate trade by other market players (refineries, storage houses and retail distributors). One of the major industry concerns is the unwillingness of the GOB to provide fiscal incentives, and thereby to accept reduced tax receipts. Recent political scandals involving smuggled oil, gray duty-free zones for petroleum imports, and the traditionally questionable distilled spirits trade, are contributing to the shaky business environment.

Raw materials for biodiesel and bioethanol

Biodiesel

Currently, local investors view biodiesel as a more attractive option than bioethanol for the following reasons:

- Strong demand in the EU and attractive profit margins;
- Relatively less start-up capital needed to build a facility;
- Existing regulations which call for no excise tax on biodiesel.

The major current constraint for biodiesel investors is the lack of raw material. Suitable for production in Bulgaria are, put in order of best to worst: sunflower seeds, rapeseed, and soybeans.

Investors are looking at sunflower as a possible source of biomass for biodiesel production. Sunflower seeds are traditionally exported in big volumes to the regional market (Turkey). MY2006/2007 sunflower production is likely to reach over 950,000 MT. However, according to industry sources, sunflower biodiesel is not in high demand due to its lower quality compared to rapeseed biodiesel, and since it does not meet the EU biodiesel standards. In addition, the industry indicates that sunflower diesel can be used only during the summer, therefore, commercial use in bigger volume is not likely.

Bulgaria is not a traditional producer of rapeseed. The rapeseed crop in 2006 is likely to be 33,000 MT, a 51% increase over 2005 but still significantly below the capacity of facilities which are being constructed. Larger farmers are willing to increase the rapeseed area in the near future; however, the crop is vulnerable to frequent winter cold spells and summer dryness, and is less well-suited than sunflower to production in Bulgaria. Currently, several German companies are offering farmers rapeseed seeds (96 Euro per a bag of seeds sufficient to plant 3.0 HA) in return of purchasing the crop at a fixed ex-farm price of 400 leva/MT (\$263/MT) which is very attractive to farmers. According to FAS office of Agricultural Affairs estimates, rapeseed production should double in the near future to 60,000 MT starting with a higher area from the fall of 2006, however, this volume will be still much below the local demand.

Soybeans are not a good alternative due to relatively dry climate and lack of irrigation. Annual production over the last several years has not exceeded 4,000 MT.

According to managers in the biofuel sector, Bulgaria will need at least 600,000 MT of oilseeds for biodiesel production in the next 2-3 years (see the list of current investment

projects in Table # 1). In addition to these larger projects, reportedly, there are a number of very small installations for biodiesel at various farms. They usually process used vegetable oils into biodiesel for their own farm vehicles. The volume and quality of this biodiesel predetermines its primary on-farm use. FAS Office of Agricultural Affairs estimates that this production does not exceed 1,000 MT/year.

If Bulgaria is not able to produce locally the necessary volume of raw materials for biodiesel, it is likely that the biodiesel manufacturers will be importing crude vegetable oil to utilize their facilities. It remains to be seen if this production/trade pattern can compete with imports of ready-to-mix biodiesel.

Bioethanol

Bulgarian wheat and corn production has traditionally exceeded domestic consumption. In very dry years, corn production suffers but supply is usually sufficient to meet local demand. On average, Bulgaria exports about 1.0 MMT of wheat and 100,000 MT to 400,000 MT of corn annually. Exported wheat and corn tend to be of lower quality suitable for industrial use. Prices are competitive. These are the primary advantages to using wheat and corn to expand bioethanol manufacturing.

As with biodiesel production, however, it is still unclear if locally-produced ethanol will be more competitive than imports. Some of the significant disadvantages of current biofuel operations or investment projects are their relative inefficiency and small size. For example, local industry estimates show corn and wheat conversion rates for grains into ethanol close to 3.4-3.8 compared to around 2.0 for most U.S. bioethanol plants.

Local and export demand for all biofuels

The EU renewable Energy Sources law requires that 5% of member states' consumption of all fuel be supplied by biofuel.

Total petroleum diesel consumption in Bulgaria currently is estimated at 1.0 million MT. This implies about 50,000 MT in Bulgaria biodiesel consumption by 2007. Estimates for local consumption of bioethanol are for 100,000 MT annually; or total potential consumption of biofuels (biodiesel and bioethanol) in Bulgaria by 2007 is estimated at 150,000 MT.

Taken together, production from all current and short-term investment capacity (in the next 2-3 years) should amount to 350,000 MT of biofuels, substantially exceeding local market demand. All managers in the biofuel industry are expecting to export at least 80% of the final product to the EU.

The local market is currently limited to one major buyer, the Russian company LukOil on the Black Sea port of Bourgas. The LukOil refinery in Bourgas is the only refinery in Bulgaria and has good technology for mixing petroleum products with biodiesel and/or bioethanol.

The other major player, which is the country's largest oil distributor, Petrol, imports oil/diesel/propane and distributes these via its own distribution and retail network. These two companies together have 539 retail gas stations in Bulgaria.

There are at least 20 other companies which independently import and trade smaller volumes of oil and diesel. Some of them have their own distribution networks, and some sell to

other distributors. Aside from LukOil and Petrol, other major distributors are OMV, Shell, Opet etc. These companies buy regular petroleum-based fuels from LukOil or Petrol or import on their own.

According to industry sources, oil importers have the technical ability to mix biofuels with petroleum-based fuels at their storage warehouses. Currently, however, there are only a few gas stations in Bulgaria equipped and ready to offer retail sales of biodiesel/bioethanol or mixed fuels. Government sources indicate that the oil industry will welcome increased use of biofuels on the market if clear and transparent regulations are written and enforced. Reportedly, the oil industry prefers to see government regulations which give preferences for mixtures of up to 5% biofuels, rather than sales of pure biofuels, mainly due to the fact that there are no flex engine vehicles in the country now.

Currently, local biofuel prices are lower than EU prices due to different excise duties and other oil market regulations. The average price of biodiesel in the EU is about 1.07 Euro/liter, about 10% less than the price of petroleum-based diesel at 1.18 Euro/liter. In Bulgaria, the few stations selling biodiesel are charging a price of 0.75-0.86 Euro/liter, which is about 7% lower than the price of petroleum diesel 0.91 Euro/liter.

Bulgarian retail biodiesel prices are therefore about 20% below EU retail prices. The lower Bulgarian prices appear to reflect production costs fairly accurately since the subsidies and other preferences provided to EU farmers and refiners are largely unavailable to Bulgarian producers.

Biomass options

Currently, no Bulgarian manufacturer uses biomass from field crops to produce fuel. Local farmers still burn fields after harvest to destroy stalks and straw in order to reduce fuel expenses for farm equipment. Recent local research shows that 30% of local wheat straw, 65% of corn stalks and 80% of sunflower stalks and shells can be used for energy production.

The Bulgarian rural population traditionally uses biomass – firewood and coal – for heating. In 2003, energy produced from biomass was 7.4% of total energy consumption. Biomass energy output for the same period was 3 times more than the production of hydroelectric energy. The major consumer of biomass energy was the population (86%) vs. industry (14%). For the period 1997-2004, biomass used by the population has increased 3.4 times while consumption of all other types of energy and oils has stagnated.

Further expansion in new biomass sources for energy production will be well received by consumers. Currently, a few foreign investment funds are active in Bulgaria. However, the new technology is still unaffordable for most local businesses and no serious prospects for affordable solutions are visible over the next few years.

Government regulations

Although lively discussions and debates about new biofuel businesses enjoy huge interest on the part of investors, farmers, processors, traders and oil companies, public information about this market is scarce. No written policies, action plans, studies or other written materials about the biofuels industry have been made available by the GOB. Information about market developments in this unregulated sector is disseminated informally rather than via transparent interaction between buyers, sellers and regulators.

In mid-2006, the GOB accelerated its work on harmonization of EU legislation and started drafting the renewable Energy Sources Law (RESL) and implementing regulations. Most likely, the law will be passed by the Parliament in October, followed by the regulations which are likely to be approved in November. The GOB's goal is to have the necessary legislation complete by the end of 2006. According to preliminary unofficial information, the law will provide a very general framework, while implementing regulations will be set out in a special Biofuels Regulation.

According to Bulgarian EU Accession Treaty and harmonized local legislation, the share of biofuels in domestic fuel consumption should reach 5.75% by 2010, and 20% by 2020 (EU Directive 2003/30). The draft RESL is likely to introduce mandatory 5% use in biofuel in 2007. The requirements will cover national annual biofuel consumption, and will not specify the type of proportions into fuel to be used, biodiesel or bioethanol. For now, regulations will treat all biofuels equally and will not seek to favor one over the other. Reductions or re-ordering of excise duties will be the major policy tool. It is expected that the excise duties will be graduated, and that 5 percent content biofuel will be subject to the lowest duty.

Biodiesel was exempted from excise duties in July 2006 (Official gazette 391 (art.32), of November 15, 2006, in effect since July 1, 2006). However, this regulations applies only when pure biodiesel is sold. Excise tax is currently applied when diesel from petroleum is mixed with biodiesel.

Excise tax exemptions for bioethanol were approved by the Budget Commission of the Parliament as a part of the new revision of the Excise Tax Act on August 3, 2006. The final revision of the Law was published and enforced in early October (Official Gazette #81 of October 6).

Another challenge for local biofuel manufacturers is the current treatment of biofuel as an excise tax product although the excise tax is zero. This designation means that biofuel can be produced only at a licensed excise storage/warehouse. Such licensing requires that a company have registered capital of 500,000 leva (\$333,000) (art.47/1, Excise Law), an amount unaffordable for small/medium size farmers. In addition, the Ministry of Environment has the authority to grant special permission to biofuel producers under regulations for waste management; this process usually takes about a year and a half, during which the company cannot operate. The third challenge to local producers is presented by competition from informal imports of some biofuels. Lack of transparent supply arrangements and tough pricing competition tend to reduce incentives to produce locally.

Currently, there are four Bulgarian associations of biofuel producers. Some of these associations have representatives on the Ministry of Economy working groups that are drafting the RESL. However, there is a concern that they do not actually represent the most significant players on the market.

Investment support

There are several state and private programs which provide various types of support for development of bio energy projects. Among these are:

- European Bank for Reconstruction and Development: credit lines to 5 local commercial banks for energy efficiency and renewable energy projects;
- Bulgaria Ministry of Environment via its Enterprise for Environment
- Management;

- EU-SAPARD investment program with 21 projects for biofuels which have been approved and are in process of implementation;
- Bulgarian National EcoFund;
- Dutch Government program (PSO) for investment in eco-energy projects;
- EU-Nordik Funds;
- Bulgarian Government Energy Efficiency Fund. According to preliminary GOB information, it is likely that this fund will start releasing soft loans to biofuel producers after RESL is passed.

Expected effects on agricultural markets

The growth European market for biofuels will spur significant changes in traditional agricultural production patterns in Bulgaria. Within the next three years, FAS/Sofia expects to see the following changes:

Corn: Corn area and production should increase to about 2.0 MMT. More changes are expected in corn production than in any other area. Over the next two years, EU demand for price-competitive Bulgarian ethanol from corn is expected to be strong. Expansion in planted areas is likely to come from currently idle agriculture land or from reduced wheat acreage, mainly in Northern Bulgaria. Some new irrigated areas are likely to be established for the first time.

Rapeseed: Bulgarian farmers may also expand also areas under rapeseed. Total additional area will not be large due to climate and other limitations; however, good prices are likely to motivate large farmers to start planting more rapeseeds in the fall of 2006. Production should rise to 50,000 MT-60,000 MT or double than the current volume. Growth in rapeseed area may come with reductions in wheat or in sunflower areas.

Sunflower: If producers are offered attractive prices, a portion of sunflower exports will be converted to the local biodiesel consumption. However, the proximity of the huge Turkish market with its enormous demand for vegetable oil, and easy access that small and medium size sunflower suppliers have to foreign buyers, will present supply challenges for local biofuel processors, especially in southern Bulgaria.

Despite expected increases in local supplies for processing of sunflower and rapeseed into biodiesel, imports of supplementary stocks and alternative raw materials are inevitable. Crude sunflower oil, rapeseeds, soybeans, soy and palm oil promise good prospects. Better opportunities exist for those buyers who are located on the Danube or Black Sea ports and have cheaper access to sea/river shipments.

In the future, the livestock industry will gradually face declining local feed supplies and climbing prices, but farmers also should learn how to use new products such as DDGS (corn distillers' dried grains with soluble). Combined with increased investment in biosecurity and animal health; higher expenses for improved food safety, and squeezed by retailers, many small and medium size livestock farms may go out of business. Faster development of the biofuel industry, along with upcoming EU competitive pressures, are likely to contribute to this trend.

In the medium-long term, bioethanol may prove to be a better solution for local agriculture compared to biodiesel – the opposite of the current situation. Bulgarian farmers tend to produce higher volumes of lower quality grains which do not meet EU quality standards for intervention stocks but are appropriate for industrial use. Due to relatively frequent dry years and lack of irrigation, wheat is the most stable local crop and the only one which

can provide steady and abundant supply. As technology improves, bioenergy producers' demand for Bulgarian corn, sunflower, wheat should put some upward pressure on prices and contribute to improved farm income.

Definitions

Biodiesel: a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats. *Biodiesel Blend*—a blend of biodiesel fuel with petroleum-based diesel fuel, designated BXX, where XX represents the volume percentage of biodiesel fuel in the blend.

Biodiesel is the name of a clean burning alternative fuel produced from renewable resources. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with no major modifications. Biodiesel is simple to use, biodegradable nontoxic, and essentially free of sulfur and aromatics. Biodiesel is typically produced by a reaction of a vegetable oil or animal fat with an alcohol such as methanol or ethanol in the presence of a catalyst to yield mono-alkyl esters and glycerin, which is removed.

Bioethanol: Basically alcohol, bioethanol is made from starch plants (grain, corn, wheat, and tubers like cassava); sugar plants (sugar beet or sugar cane); and – although still in the preliminary stages - from cellulose plants. Bioethanol is obtained using biological production technology, which is fermentation and subsequent enrichment by distillation/rectification and dehydration.

Ethanol or ethyl alcohol (C₂H₅OH) is a clear colorless liquid, it is biodegradable, low in toxicity and causes little environmental pollution if spilt. Ethanol burns to produce carbon dioxide and water. Ethanol is a high octane fuel and has replaced lead as an octane enhancer in petrol. By blending ethanol with gasoline we can also oxygenate the fuel mixture so it burns more completely and reduces polluting emissions.

Ethanol fuel blends are widely sold. The most common blend is 10% ethanol and 90% petrol (E10). Vehicle engines require no modifications to run on E10 and vehicle warranties are unaffected also. Only flexible fuel vehicles can run on up to 85% ethanol and 15% petrol blends (E85).

Table 1. Biofuel companies and investment projects in Bulgaria as of September, 2006

Biofuel companies and investment projects in Bulgaria as of September, 2006			
Company	Location	Annual capacity	Raw material
Biodiesel			
BioDreems	Lovetch	20,000 MT in operation	sunflower, soybeans and rapeseed
Galaksi Oil	Silistra	15,000 MT in operation	sunflower, soybeans and rapeseed
Galaksi Oil	Pleven	30,000 MT expected launch by September 2007	sunflower, soybeans and rapeseed
Slantchevi Iuchi/TIM	Provadia	100,000 MT expected launch by 2007	sunflower, soybeans and rapeseed
Klas Olio	Karapelit/Dobrich	30,000 MT in operation	sunflower, soybeans and rapeseed
EkoPetroleum	Vidin	175,000 MT with plans to expand to 300,000 MT estimated needs in oilseeds by 400,000 MT; ready for operation by 2008;	Sunflower (50% or 200,000 MT) and rapeseed (50% or 200,000 MT)
BulMarket	Rousse	60,000 MT ready to start operations by February, 2007; estimated needs in oilseeds at 150,000 MT	Rapeseed (40% or 60,000 MT) and sunflower (60% or 90,000 MT)
Bioethanol			
Slantchevi Iuchi/TIM	Rousse/Silistra area	100,000 MT expected launch by 2008	Wheat and corn
EvroEtil	Alfatar/Silistra	18,000 MT in operation; new project for 36,000 MT to be built in 2007; estimated current consumption of grain 60,000 MT;	Wheat and corn
Alcol Group	Gorna Malina/Sofia	10,000 MT, estimated grain consumption 30,000 MT,	Wheat and corn

		expected launch of the facility in 2007	
BioGroup (German investment fund ICS International Consulting SP)	Silistra, Shoumen, Yambol, Chirpan, Mezdra and Pernik	Total 600,000-700,000 MT/year 2 facilities for bioethanol and 4 facilities for diesel;; Expected launch of the facilities by 2008	Biomass (urban garbage) and used vegetable/animal oils/fats
Farin	Varna	20,000 MT-30,000 MT, expected launch of the facilities by 2008	Wheat and corn
Note: Information in this table is based on trade interviews, industry sources estimates and media publications. The FAS office Sofia can not officially confirm the truthfulness and completeness of the above information due to lack of any Government of other official public registers or sources.			